

EFFECTS OF PRENATAL EXPOSURE TO AMBIENT AIR POLLUTION ON RESPIRATORY HEALTH IN EARLY LIFE – SOME METHODOLOGICAL CONSIDERATIONS BASED ON 'EDEN MOTHER-CHILD' COHORT

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Background and Aims: The increasing availability of air pollution (e.g., dispersion) models with a fine spatial resolution in large areas offers opportunities to try better characterize the effects of prenatal exposure to air pollution on respiratory health in early-life. We aimed at evaluating this association and at illustrating some issues related to confounding and choice of study area that may impact on effect estimates.

Methods: We included 1082 mother-child pairs from EDEN cohort, living in rural and urban areas around Poitiers and Nancy, France. NO₂ and PM₁₀ levels in the ambient air at the home addresses were estimated using ADMS dispersion model. Information on health outcomes until 1 year of age was obtained from questionnaires.

Results: Mean (sd) pregnancy exposure to NO₂ and PM₁₀ were 20.9 (8.1) and 20.1 (4.3) µg/m³, respectively. The adjusted odds-ratio (AOR) associated with a 10 µg/m³ increase in NO₂ was 0.78 (95% confidence interval, 0.52-1.15) for doctor-diagnosed asthma, 0.81 (0.62-1.05) for wheeze and 0.95 (0.75-1.21) for bronchitis/bronchiolitis in the entire population. The AOR for doctor-diagnosed asthma was 1.15 (0.55-2.43) in Poitiers and 0.63 (0.38-1.04) in Nancy. Similar patterns, with no significant associations, were observed for PM₁₀. Maternal smoking habits, mode of transport, breastfeeding, daycare attendance differed significantly between both cities, urban and rural areas, and according to exposure levels..

Conclusions: Prenatal exposure to air pollutants was not significantly related to respiratory health in the first year of life; this may partly be explained by the low exposure levels and the early age of assessment of respiratory health. Additionally, exposure was strongly associated with area of residence and with many factors known to be associated with respiratory health. Given that these factors could not always be accurately assessed, there is potential for residual confounding. The potential for confounding may differ between urban and rural areas.